RESET - ARCS GNDRAD and SKYRAD Datalogger Verification

I. Purpose:

The purpose of this procedure is to describe the steps performed by the RESET team to verify proper operation of the GNDRAD and SKYRAD dataloggers using precision resistors and a shorting lead.

II. Cautions and Hazards:

- Conduct these procedures at the dataloggers of there is no reasonable chance of rain.

III. Requirements:

- 0.1% precision resistors.
- Clip-lead to short the input.
- Eight-pin Breakout box.
- RS422/232 data conversion box.
- Computer with terminal emulation software.

IV. Procedure:

A. Steps:

1. Put 4120 W precision resistors across pins 2 and 3, and 7 and 8 of the breakout or sensor substitution box.
2. Attach a clip-lead across pin 4 (minus) and pin 5 (plus).
3. Connect the breakout or sensor substitution box to connector 2 (or 6) on SKYRAD or connector 6 on GNDRAD datalogger.
4. Disconnect connector Term (to ADaM) and connect RS422 converter box.
5. Connect 9-pin connector on the converter box to computer with terminal emulator software (communications at 9600 baud, com1, 8 bits, 1 stop bit, No Parity, Xon/Xoff).
6. Press "**U**" (no carriage return) to establish communications with the ZENO.
7. Select the "Test Menu."
8. Press "**R**" for raw data in volts.
9. Examine PIRG (or PIRD) data for a zero offset; it should be within ±16 mV.

10. If an offset greater than 16 mV is observed, restart the datalogger by cycling the power and recheck the offset.
11. Log the offset voltage on the form.
12. Change to user menu (press "**U**").
13. Type "**F**" for System Function Menu.
14. Type "**C4/1**" to enable Real-Time Output format.
15. Type "**Q**" to quit.
16. Examine Case and Dome resistances for PIRG (or PIRD).
17. Log the measured resistances, time, and date on form.
18. If the differences are greater than 20W, check resistances with calibrated Digital Multimeter and repeat.
19. If differences greater than 20W persists, a datalogger calibration is required (see **PRO(DAQR)-001**.)
20. Disable real-time output by selecting System Function Menu and typing C4/0.
21. Quit to terminate the connection.

V. References:

1. Coastal Environmental Systems, "Acceptance Procedures," 1995.
2. Zeno Corp., "Zeno-3200 Users Manual," May, 1995.
3. Hart, R. "GNDRAD and SKYRAD Datalogger Calibration Procedures", ANL ARCS Procedures, 1997.

VI. Attachments:

1. SKYRAD & GNDRAD Sensor Configuration Table
2. SKYRAD Verification Form
3. GNDRAD Verification Form

Attachment 1. SKYRAD & GNDRAD SENSOR CONFIGURATION TABLE

Sensor or Instrument	Designation	Sensor Menu No.	Connector No.
SKYRAD Global Pyrgeometer	PIRG	4	2
SKYRAD Diffuse Pyrgeometer	PIRD	5	6
GNDRAD Upwelling	PIRDN	1	6

Attachment 2. SKYRAD VERIFICATION FORM

SITE:		DATE:		TIME:	

SIGNAL	INPUT	LOGGER
PIRG	0 V	
PIRG Rc	4120 W	
PIRG Rd	4120 W	
PIRD	0 V	
PIRD Rc	4120 W	
PIRD Rd	4120 W	

Attachment 3. GNDRAD VERIFICATION FORM

SITE:		DATE:		TIME:	

SIGNAL	INPUT	LOGGER
PIRDN	0 V	
PIRDN Rc	4120 W	
PIRDN Rd	4120 W	